NOTES.

WE notice with deep regret that Sir Clement Le Neve Foster, F.R.S., professor of mining in the Royal College of Science, died in London on Tuesday, at sixty-three years of age.

THE Faraday lecture of the Chemical Society was delivered at the Royal Institution on Tuesday by Prof. W. Ostwald, his subject being "Elements and Compounds." At the end of the lecture, Prof. Tilden, who occupied the chair as president of the society, presented Prof. Ostwald with a medal bearing the image of Faraday, which had been specially struck in commemoration of the occasion. A vote of thanks for the lecture was proposed by Prof. Dewar, seconded by Prof. Thorpe, and supported by Lord Rayleigh.

MR. FRANCIS GALTON is about to address a circular letter and a schedule of questions to each fellow of the Royal Society on "Ability in Families." He asks for a return of those relatives in specified near degrees who have achieved any kind of "noteworthy" success. This is defined to be a success in any pursuit whatever that ranks among those who follow that pursuit at least as high as success in gaining the title of F.R.S. ranks among men of science. Nothing is desired that is otherwise than honourable to members of the family, and nothing that has not already appeared in print, though it would be very difficult, if not impossible, for a stranger to hunt it all out for himself. This new form of hereditary inquiry is expected to be fruitful of results, and will probably be extended in other directions after the experience of the present attempt.

THE death is announced of Dr. A. P. Aitken, professor of chemistry and toxicology in the Royal (Dick) Veterinary College, Edinburgh, since 1875.

MR. PERCY LONGMUIR, of University College, Sheffield, has been appointed junior assistant in the metallurgical department of the National Physical Laboratory. Mr. Longmuir is a pupil of Prof. Arnold, and has for two years been engaged in research as a Carnegie scholar of the Iron and Steel Institute. He will at present assist Dr. Carpenter in carrying on the work undertaken by the laboratory for the Alloys Research Committee of the Institution of Mechanical Engineers.

As the searches hitherto made for Baron Toll's polar expedition have been in vain, a reward of 5000 roubles (500*l.*) is offered by the Academy of Sciences at St. Petersburg for finding the whole expedition party, or any part of it, and a reward of 2500 roubles (250*l.*) for giving the first exact indications of tracing the party. The expedition, which was sent out by the Academy of Sciences, left the Bennett Island, lying north of New Siberia, on October 26 (November 8), 1902, taking a southern direction. It has been suggested that the expedition may have drifted towards Franz Josef Land, and it is therefore desired to direct the special attention of whalers to this notice.

THE Weights and Measures Bill, designed to secure greater uniformity in the administration of the law relating to weights and measures, was read a second time in the House of Commons on April 15. In moving the second reading, Mr. Bousfield explained the provisions of the Bill, and pointed out that the fourth section of the Bill had reference to the metric system. It was proposed that after January 1, 1908, the two abnormal systems of troy weight and apothecaries' weight should be abolished in favour of the metric system. This would produce no disorganisation of trade, and would be an instalment of the reform desired, which, although a measure was now before the other House, it was unlikely that any Government would make *en bloc*, as it would at first result in unpopularity. In the subsequent debate many objections were raised to this section of the Bill, and it was on the understanding that the section referring to the metric system was to be withdrawn that the Bill was read a second time.

WE regret to see the announcement of the death of Sir Henry Thompson, distinguished as a surgeon and by his active interest in many departments of science. Sir Henry Thompson was born at Framlingham, Suffolk, on August 6, 1820, and received his early education at University College, London. He gained the Jacksonian prize of the Royal College of Surgeons in 1852 and 1860 for essays on surgical subjects. In 1866 he was appointed professor of clinical surgery in University College Hospital; and in 1884 he became professor of pathology and surgery to the Royal College of Surgeons. He took a leading part in the establishment of cremation in this country as a proper method of disposal of the dead, and was president of the Cremation Society from its foundation in 1874. He was the author of numerous works, including volumes and papers on the branches of surgery in which he was an acknowledged master, on motor cars, horses, diet and death certification, and also of two novels. For several years he cultivated astronomical studies, and had a well equipped observatory constructed at Molesey, but this was abandoned after a time, and the two fine refractors were presented to the Royal Observatory, Greenwich. Later, in 1897, Sir Henry Thompson added to his gift the thirty inch photographic reflector which bears his name. He was knighted in 1867 and created a baronet in 1899, and was the recipient of many honours and distinctions from professional and other learned societies, both at home and abroad.

PROF. C. L. BRISTOL, professor of biology, New York University, asks us to announce that English and Continental naturalists will be gladly welcomed at the Bermuda Biological Station for Research. Harvard University and New York University unite with the Bermuda Natural History Society in inviting zoologists and botanists to spend six weeks in this temporary biological station, to be situated, as last year, at the Flatts, Bermuda. The laboratory is a new building, and is furnished with all the ordinary glassware, reagents and apparatus provided in modern marine laboratories; but microscopes, dissecting instruments, slides and cover glasses are not supplied by the station. The means of collecting include a steam launch forty-five feet long and crew, a fish-well sailboat and crew, rowboats, a two-horse carriage carrying ten or twelve persons, nets, seins, water glasses, towing and dredging apparatus, &c. Zoologists and botanists who desire to take advantage of the opportunities offered by the station should send applications as early as possible, and not later than May 1, either to Prof. E. L. Mark, 109 Irving Street, Cambridge, Mass., or to Prof. C. L. Bristol, New York University, University Heights, New York City.

THERE is at Durango, Mexico, a great mass of iron ore which has figured in story and fable for 300 years, and was thought to be a meteorite by Humboldt, who, however, did not quite reach Durango in his explorations. Mr. Le Roy, the United States Consul at Durango, now reports that the mass proves to be a remarkable dyke, emerging from a rocky plain at the elevation of 6300 feet, rising from 400 feet to 650 feet in height itself, and forming a mass of iron ore a mile long and one-third of a mile wide. It has been calculated that it contains 500 to 660 million gross tons above the surface, while there are no means of knowing what may be below. The ore is a hard specular hematite, with, on an average, 60 per cent. of metallic iron, much of it going up even to 67 per cent.

THE recent annual presidential address of Mr. T. Fairley to the Society of Analysts has been published as a separate pamphlet, a copy of which has reached us. The president, we notice, directed attention to the fact that we are falling behind both Germany and America in research work in analytical chemistry, and proceeded to urge each member of the society to do his utmost, not only to remove this reproach, but to seek to restore to this country a front rank in the cultivation of this branch of chemistry.

THERE was a considerable attendance at the triennial meeting of the German Meteorological Society held at Berlin during Easter week, under the presidency of Prof. von Bezold, the meetings being held at the Institut für Meereskunde. Numerous papers were read and discussed, those on April 7 and 9 being mainly meteorological, and those on April 8 electrical and magnetical, the one which occasioned the most animated discussion being communicated by Prof. Holdefleiss, Halle—"Ueber die meteorologischen Ursachen des Auswinterns des Getreides." On the afternoon of April 7 the members were conducted over the Meteorological Institute in the Schinkelplatze; that of April 8 was devoted to the Physical Observatory at Potsdam; that of April 9 to the meteorological and military balloon and kite flying establishments at Tegel; and the evening to the Geographical Society's meeting; and Sunday evening to the Astronomical Observatory at Treptow. At Tegel the Luftschiff military section charged a balloon of 600 cubic metres within three minutes; within fifteen minutes it had been attached to its car, and, with two officers on board, had disappeared beyond the clouds. The military authorities also carried out wireless telegraphy experiments by means of kites. Dr. Assmann, in charge of the meteorological station, had observations taken at a considerable elevation by means of a kite, and also dispatched a small rubber free balloon with a set of instruments attached.

IN accordance with an imperial decree, the duties of the Earthquake Committee of the Academy of Sciences of Vienna have been transferred to the Central Meteorological Office, the director of which is Dr. J. M. Pernter. The title of the institution is now changed to K.k. Zentralanstalt für Meteorologie und Geodynamik.

IN our issue of December 10, 1903 (p. 135), attention was directed to some of the leading features of a paper read by Dr. H. R. Mill at a meeting of the Institution of Civil Engineers on November 24, on the mean and extreme annual rainfall over the British Isles. A complete copy of this valuable paper has now been received, containing an abstract of the discussion upon it. It is accompanied by three tinted maps showing respectively the mean rainfall in 1870–99, the maximum rainfall in 1872, and the minimum in 1887. There are also three outline maps showing the positions of stations used, and the distribution of the extremes of annual rainfall, the years of occurrence being entered in the geographical positions of the stations. A glance at the map of stations shows that great care has been exercised in their selection, and that materials were forthcoming (except in one or two of the Irish districts) for a remarkably uniform distribution of stations over the whole of the British Islands.

THE great dustfall of February, 1903, has been discussed by Dr. H. R. Mill and R. G. K. Lempfert, and the results published in the *Quarterly Journal* of the Royal Meteorological Society of January last. Before the completion of this investigation an elaborate discussion of the same phenomenon was published by Dr. E. Hermann, of Hamburg, in the *Annalen der Hydrographie* for October and November, 1903. The English authors have approached the subject from a somewhat different point of view from that taken by Dr. Hermann, and have concerned themselves mainly with the relation between the fall of dust and the larger motions of the atmosphere, illustrated by a series of maps embracing the North Atlantic and the western portion of Europe. They have also paid more particular attention to the fall over the British Islands. The area over which it fell thickly in England and Wales is estimated at not less than 20,000 square miles, to the south of a line drawn from Anglesey through Wrexham and Northampton to Ipswich, and the total deposit in England is estimated at not less than ten million tons. There is strong evidence in favour of the dust being of African origin, and that it travelled at a very high altitude. The paper includes some interesting descriptions of competent observers, and a valuable note of a microscopical examination of a number of specimens of the dust by Dr. J. S. Flett, of H.M. Geological Survey.

PROF. H. F. OSBORN sends us an interesting photograph of the Tasmanian wolf taken by Mr. E. T. Keller, and here reproduced. The photograph illustrates an interesting observation made by Mr. Keller that in the resting position the stiff tail is used to support the animal. Prof. Osborn remarks:—"I have not seen this interesting fact recorded elsewhere. It is, however, possible that it is well known among students of the habits of this animal."

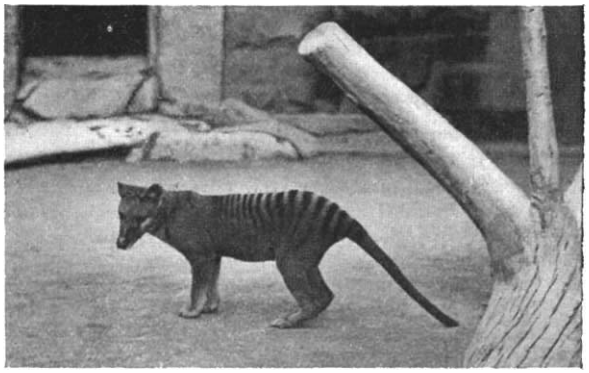

FIG. 1.—Resting Position of the Tasmanian Wolf.

THE occasional appearance during winter of pipistrelle bats, hedgehogs, and frogs, according to a paper by Mr. C. B. Moffat in the April number of the *Irish Naturalist*, is, in Ireland at any rate, much more frequent than is commonly supposed. In the same issue Mr. G. C. Gough discusses the formation of iron-ore in Lough Neagh, and concludes that this is chiefly due to the decomposition of the magnetite in the surrounding rocks.

AMONG the contents of the *Jahrbuch* of the Nassau Naturalists' Union, published at Wiesbaden, is an article by the editor, Dr. A. Pachenstacher, on the hawk-moths and Bombycidæ collected by Baron Carlos von Erlanger during his travels in Shoa, Gallaland, and Somaliland in 1900 and 1901. In another paper Dr. W. Schuster describes the enormous number of long-eared owls nesting in the warm Mayence basin.

FOLLOWING its removal to surroundings better suited to studies of this nature, Christ's Hospital, Horsham, has founded a natural history society of its own, the first report of which is now before us. Naturally, the start has been somewhat uphill work; but, nevertheless, considerable progress has been made, and all the sections are in working order. Funds appear to be much needed for the museum.

To the February issue of the *Proceedings* of the Philadelphia Academy Mr. J. A. G. Rehn contributes a paper on the Central and South American bats of the genus Chilonycteris, in which all the species are critically reviewed. The most striking feature about these bats is the occurrence of a rufous and a dark brown phase in each species. In some the two phases are very marked, but in others they are connected by intermediate shades. It is not stated whether the two phases (which also occur in bats of two allied genera) have any connection with locality.

IN the report of the Trivandrum Museum for 1903 attention is directed to two dolphins obtained during the year. One has been identified by Mr. Lydekker with *Tursiops catalania*, hitherto known only from Australian seas, while the second has been made the type of a new species, *Sotalia fergusoni*. Descriptions of both were sent to the Bombay Natural History Society. Mr. Ferguson, who is about to retire from the post of director, summarises the progress that has been made in the museum during his term of office. When he took over the duties in 1888 the collection consisted of "odds and ends," without any representation either of the arts and manufactures or of the fauna of Travancore. This "curiosity shop" has been replaced by a representative series of local arts and manufactures, as well as by nearly complete collections of the vertebrates.

AN important paper, by Dr. Bashford Dean, on the hag-fishes of Japan, is published in the *Journal* of the Tokyo University School of Science (vol. xix. art. 2). Two new species are described, one remarkable for its large size and the normal possession of eight gill-openings, and the other constituting a new generic type (Paramyxine). Japan appears to be the most favourable locality at present known for the study of hag-fishes. "In no other known locality are four species, representing three genera of these important chordates, found living practically side by side—for in the neighbourhood of Misaki they occur within a distance of 30 kilometres. Here, too, a form of myxinoid can be obtained in greater abundance than in any locality known to me, and there is also a promising field for collecting developmental stages."

THE "Nature of Heredity" forms the subject of an address delivered in April, 1903, before the South African Association for the Advancement of Science by Dr. A. Dendy, which is published in the first volume of the report of that body. To give a summary of the author's arguments in such a difficult subject would far exceed the limits of our space, but it may be mentioned that Dr. Dendy is of opinion that the views of the late Prof. Cope on heredity come nearer the truth than those of any other writer. There are three special points:—(1) the importance of the cell-nucleus as an apparatus for storing up and giving out stimuli; (2) the possibility of the transference of stimuli between somatic cells and germ-cells (or their nuclei) without any material connection; and (3) the extension of what may be called Herbert Spencer's principle of equilibration to the phenomena of heredity and development, to which, in Dr. Dendy's opinion, sufficient consideration has not been given.

THE submarine valleys off the American coast and in the North Atlantic are described by Prof. J. W. Spencer (*Bull.* Geol. Soc. America, vol. xiv.), who sees evidence in these drowned lands of canyons and other deeply excavated features.

SOME Jurassic fossils from Rikuzen, in Japan, are described by Prof. Matajiro Yokoyama (*Journ.* Coll. Sci., Tokyo, vol. xviii.). These include Schlotheimia, Lytoceras (near to *lineatum*), and other ammonites, as well as belemnites; also *Trigonia v-costata*, and species of Gervillia and Perna.

WE have received several of the *Bulletins* of the Geological Survey of Western Australia. Among these, No. 10 contains descriptions, by Mr. R. Etheridge, of Carboniferous fossils from the Gascoyne district; No. 9 is on the lead and copper ores of Northampton, by Mr. A. Gibb Maitland; and No. 8 is on the Murchison goldfield, by Mr. C. G. Gibson.

IN a lecture on the Assuân Reservoir and Lake Moeris (E. and F. N. Spon, 1904), Sir William Willcocks advocates the formation of a modern Lake Moeris to the south of the ancient lake which for more than 2000 years served to control the floods of the Nile. The new lake would occupy the Wadi Rayan depression. In support of his argument that further measures are necessary, he mentions that since the Assuân dam was completed the whole of the water has been devoted to special tracts, and the Government is reluctantly compelled to refuse further applications for water.

THE fundamental facts of statical electricity are concisely described, with illustrative experiments, by Herr B. Kolbe in his "Einführung in die Elektrizitätslehre, I. Statische Elektrizität," of which a second revised edition has been published by Herr Julius Springer, Berlin.

MESSRS. ISENTHAL AND CO., 85 Mortimer Street, London, W., have published a new illustrated catalogue of apparatus for electrotherapy. The illustrations and descriptions of the apparatus are of a very instructive character. Among other instruments included may be mentioned the Röntgen ray apparatus of all kinds, that for the therapeutical uses of currents of high frequency and high potential, and that for photo- and thermotherapy.

THE Geological Survey of Canada has published a report on "Altitudes in the Dominion of Canada," by Mr. James White, geographer to the Department of the Interior. The report is accompanied by an excellent relief map of North America, and by four sheets of profiles. Three sheets are concerned with the Canadian Pacific Railway—this railway being chosen as showing the profile of the country along the only transcontinental line in Canada—and one shows the River St. Lawrence and the Great Lakes.

THE report of the first meeting of the South African Association for the Advancement of Science, held in April of last year, has been received. It is unnecessary to enumerate in detail the contents of the volume, which runs to 556 pages, for the chief events of the meeting were described in our issue for May 21, 1903 (p. 59). The presidential address by Sir David Gill, F.R.S., and the addresses of the presidents of the four sections into which the work of the association was divided, are all printed at length. Meteorological papers were numerous and important in Section A, though the other subjects, chemistry, astronomy, mathematics, and physics, with which the section is also concerned, are all represented. The subjects in Section B were chiefly of a biological and geological character; in Section C various engineering questions were discussed, and in Section D great prominence was given to education, philosophy and sociology. The volume deals with forty-seven papers, which are with a few exceptions printed in full or abstracted.

UP to the present the alloys of nickel and iron have attracted attention chiefly on account of the fact that alloys containing about 35 per cent. of nickel have an exceedingly small coefficient of expansion, which in certain cases may even become negative. Their elastic properties appear, however, to be of equal interest and importance, and a paper on this subject, by M. Guillaume, in the *Séance* of the French Physical Society, contains a number of important data. At ordinary temperatures the modulus of elasticity reaches a maximum at 29 per cent. and a minimum at 45 per cent. of nickel, and between these limits the modulus of elasticity *increases with the temperature,* whilst two alloys must exist in which the modulus is independent of the temperature. These results can be explained by supposing that the change from β to γ iron is accompanied by a large increase in the modulus of elasticity, and that in the alloys referred to this transition is brought down to the ordinary temperatures and extended over several degrees.

IN recent months some attention has been paid to the problem of bringing about electrolytic decomposition by means of alternating currents. The most important paper that has appeared on the subject is that by Le Blanc and Schick in the *Zeitschrift für physikalische Chemie*, in which experiments are described on the dissolution of metals in various solvents by the aid of alternating currents of frequency ranging from 72 to 38,600 alternations per minute. In the simpler cases, such as the dissolution of copper in sodium hydrogen sulphate, the weight of metal dissolved is very small, and even at a frequency of only 72 is less than one-third of that calculated from Faraday's law. On the other hand, potassium cyanide, especially in concentrated solutions and with a high current density, dissolves the metal freely even with very high frequencies, and in one experiment the weight of copper dissolved amounted to no less than 66 per cent. of the theoretical quantity when the frequency was above 30,000; this result is probably due to the formation of complex double cyanides in which the metal forms part of the acid radicle, and so is hindered from being re-deposited on the electrode.

THE additions to the Zoological Society's Gardens during the past week include a Campbell's Monkey (*Cercopithecus campbelli*) from West Africa, presented by Mr. J. A. L. Campbell; a Vulpine Phalanger (*Trichosurus vulpecula*) from Australia, presented by Mr. Herbert A. Parkes; an African Civet Cat (*Viverra civetta*) from Africa, presented by Lieut. H. Nelson, R.A.; three Reeve's Pheasants (*Phasianus reevesi*) from northern China, presented by Miss J. Mann; a Blue-fronted Amazon (*Chrysotis oestiva*) from South America, a Princess of Wales's Parrakeet (*Polytelis alexandrae*) from Australia, presented by Mrs. St. Clair Christophers; a Bonnet Monkey (*Macacus sinicus*) from India, a Blackish Macaque (*Macacus fusco-ater*) from the Celebes, a Striped Hyæna (*Hyaena striata*) from North Africa, a Virginian Opossum (*Didelphys virginianus*) from North America, a Burrowing Owl (*Speotyto cunicularia*) from South America, a Grey Parrot (*Psittacus erithacus*) from West Africa, five Eyed Lizards (*Lacerta ocellata*), south European, deposited; a Mouflon (*Ovis musimon*), born in the Gardens.

OUR ASTRONOMICAL COLUMN.

RETURN OF BROOKS'S COMET.—A telegram received from the Kiel Centralstelle on April 17 announces that Brooks's comet was observed at Geneva at 9h. 50m. (Geneva M.T.) on April 16. Its position at that time was R.A. = 16h. 58m. 8s., decl. = +44° 10′, and it was slowly travelling northward. Both a nucleus and a tail were seen.

A second telegram received on April 18 announces that Prof. Kobold observed the comet on April 17, and found its position, at 11h. 34m. 0s. (Kiel M.T.), to be R.A. = 16h. 56m. 23·8s., decl. = +44° 43′ 47″.

The above data show that on April 16 the comet was nearly on a straight line joining σ and ι Herculis, and rather nearer to the former than the latter, also that the comet is apparently travelling towards Draco.

ABSORPTION OF STAR-LIGHT BY A COMET'S TAIL.—In No. 3914 of the *Astronomische Nachrichten* Dr. Max Wolf discussed a photograph which led him to the conclusion that the light of the star B.D. +63°·1056 was affected by selective absorption in passing through the tail of comet 1903 IV. on July 25, 1903.

The consideration of later observations has led him, however, to doubt the reality of the apparent absorption, which he now considers may have been due to a photographic effect produced by the comet's light on the film of the negative (*Astronomische Nachrichten,* No. 3934).

THE SPECTRA OF NOVÆ.—In an article published in No. 3917 of the *Astronomische Nachrichten*, Herr H. Ebert explains how the multiple character of the lines in the spectra of new stars may readily be accounted for by supposing it to be due to "anomalous refraction" in the layers of vapours, of different characters and densities, through which the light has to pass between the source and the observer. By a number of curves and diagrams he shows that in the complex strata, which may be reasonably supposed to exist in the vapours surrounding a new star, the light would be refracted hither and thither until, when it emerged from the outer layers, the distribution of the brightness in the spectrum would have been considerably modified by anomalous refraction.

The "shifting" of spectral lines in the experiments which have been performed by several observers on the spectrum of the spark discharge under various liquids may, according to Herr Ebert, be readily explained by this theory.

NEBULOSITY AROUND NOVA PERSEI.—In No. 2, vol. xix., of the *Astrophysical Journal,* Mr. Otto Luyties, of Baltimore, discusses the theories which have been promulgated in reference to the nature and the expansion of nebulosity around Nova Persei, and points out the effect which the shape of the body concerned might have upon the observed velocities. He states that the previous estimations of the parallax of the Nova nebula and of the rate of its expansion have been partly based on the probably erroneous assumption that the emanations which caused the illumination were originally propagated in a direction at right angles to the line of sight. If, however, the mass illuminated were spherical in form, the resulting distortion on the photographic plate would lead to serious misconceptions as to the rate of expansion and the nature of the emanation. Mr. Luyties then discusses the possible effects of such distortion, both for the case of radial illumination from the centre and for that in which the emanation proceeded from a point on the boundary of the sphere, and shows that the correction for such distortion, when a likely value is allotted to the parallax, could be made to account readily for the apparent retardation of the illuminations, and for other anomalies which have been observed, when the actual velocity of the emanations was of the order of that of light.

STELLAR DISTRIBUTION.—A communication from Mr. J. E. Gore to No. 343 of the *Observatory* gives the results obtained from a count of the stars of each magnitude from the third to the sixteenth on a chart of the Pleiades published in Klein's Star Atlas. This chart covers three square degrees, and Mr. Gore finds that the actual value of the ratio for all magnitudes is considerably less than 4, which is the theoretical value if all the stars were equally distributed in space.

The total number of stars counted on the chart was 1281, and this would give for the whole sky, if of uniform richness, a total of 17,615,031.